Uricchio Lab @Tufts: PhD Positions

We are a new computational evolution & ecology group in the Department of Biology at Tufts University, located just outside of Boston, MA. Our research asks:

1. when is evolution important for explaining species' persistence?
2. how do evolutionary processes affect disease prevalence/inheritance?
3. can we resolve the evolutionary processes driving genetic variation?

As a lab group, we seek to initiate positive social and environmental change through our research and outreach. The group's research employs a variety of techniques, ranging from model-based simulations and mathematical modeling to collecting and analyzing observational data (both ecological and genomic).If you think you might be interested in joining us, please read more below and get in touch! You can email Lawrence at `Lawrence.Uricchio@tufts.edu`, or visit our webpage https://uricchio.github.io/.

What's our research all about?

It's now clear that rapid climate change, habitat loss, disease spillover, and changing species interactions have driven many species to very low population abundance or extinction. And it's also clear that species can sometimes adapt rapidly to changing conditions, but we still know relatively little about the ecological, evolutionary, and genetic factors that facilitate or prohibit rapid adaptation. My work combines theoretical population genetic models, genomic data, and observational ecological data to try to predict when species will or will not be able to adapt sufficiently rapidly to persist. I have worked in a variety of empirical (*e.g.*, California grasslands, poison frogs, humans) and theoretical (*e.g.* model-based simulations, mathematical models) contexts.

The study site of some recent work in the highly invaded California Floristic Province (Uricchio et al 2019, The American Naturalist).

I also work on the links between mutation, disease, and public health. For about 15 years, human geneticists have been using large case-control studies to try to localize the portions of the human genome that may contribute to disease risk. I study how evolution may affect our ability to detect the most relevant disease-associated genetic variation.

As a critical component of our research agenda, I hope to reach an audience that extends beyond practicing scientists. Previous outreach work has included mentorship of high school students, social media engagement, and science career events. The lab's future outreach and community engagement plans are developing and I hope to include local high school teachers. I would love to hear and develop your ideas as well!

About the positions

I am looking for 1-2 PhD students to begin with the Fall 2021 cohort in the **biology PhD program at Tufts**. While I aim to recruit students who are broadly interested in evolutionary genetics and/or evolutionary ecology, the exact questions and study systems are open. This is a computational research group, with expertise in evolutionary modeling, simulations, and inference. However, there are also opportunities to develop empirical study systems (which could include field work or bench work) in cooperation with many collaborators. The positions will be funded by a mix of startup funds available to the PI and TA-ships in the department. Tufts students are guaranteed a stipend and health insurance for six years, and will not owe tuition to the University.

Joining a new group can offer several advantages, such as the opportunity to help steer the lab's research vision for many years to come. Moreover, Tufts is exceptionally strong in **evolution, genetics, and ecology**, with many opportunities to interact with established colleagues within and beyond the department.

The process for applying to PhD programs in ecology and evolution can be cryptic. Typically it's a good idea to get in touch with the PI in advance to learn more about the lab and University, and I would love to hear from you (`Lawrence.Uricchio@tufts.edu`)! To learn more about the process of applying to programs, see this **site from my colleague Erin Mordecai**.

What are we looking for?

I am looking for students who are curious about evolution and ecology, who are interested in learning about and applying modeling techniques in some capacity, and who hope to make positive social changes in our scientific community. The **graduate program website** will give you some general overall guidelines about qualifications for admission. Please note the GRE is not required this year.

The Science and Engineering Complex (SEC) at Tufts, where the lab is housed.

The main requirements for joining the lab are 1) a bachelors or equivalent in biology or a related science or engineering field and 2) a demonstrated interest in evolution and/or ecology. Your interest could be demonstrated in multiple ways (ranging from the traditional, such as research experience, to the less traditional, *e.g.* maintaining a personal blog about evolution books you've read). For joining the lab, it is not required to have a computational background. Most importantly, I want to learn about why you want to study evolution, and what you're interested doing with your career (which need not be an academic career).

I don't really care whether you went to a fancy college, whether you have a perfect GPA, or whether you can derive equations off the top of your head. I believe that scientific inquiry is driven by passionate curiosity about the world, and that our personal identities inform the questions that we ask. I look forward to learning more about what drives your interest in evolution and ecology!